

CLAIMS

1. A separating device for separating components flowing along a channel, the device comprising a main channel branched at a branch point connected to at least two subsidiary channels, and switchable voltage control means for controlling a voltage in the region of the branch point to provide potential differences of opposing polarity along the subsidiary channels such that components to be separated are caused to flow from the main channel into a selected subsidiary channel.
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2. A separating device according to Claim 1 wherein the switchable voltage control means is adapted, on switching, to reverse the polarity of the potential differences along each of two subsidiary channels at a branch point so that any one subsidiary channel can be selected to be subject to a different polarity from every other subsidiary channel at that branch point.
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3. A separating device according to either one of the preceding claims wherein the voltage control means operates in dependence upon the flow behaviour of the components to be separated.
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4. A separating device according to claim 1 or claim 2 wherein the voltage control means is provided with a detector for use in controlling voltage, the detector being adapted to detect flow behaviour of at least one component to be separated.
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5. A separating device according to any one of the preceding claims, wherein the main channel is branched at more than one branch point and the
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voltage control means is adapted to control voltage in the region of each branch point independently.

6. A separating device according to any one of the preceding claims,
5 comprising a first voltage source, for connection to at least one subsidiary channel to produce a potential difference along the main channel and said at least one subsidiary channel, and a second voltage source for use by the voltage control means in the region of one or more branch points.
- 10 7. A separating device according to any one of Claims 1 to 5, comprising a voltage source, for connection to all the subsidiary channels at the same time to produce a potential difference along the main channel and each subsidiary channel, and wherein the voltage control means comprises means for short circuiting a point along the main channel to a point along at least one of the
15 subsidiary channels, in the region of the branch point for that subsidiary channel.
- 20 8. A separating device according to any one of Claims 1 to 5, comprising a voltage source for connection to at least one subsidiary channel to produce a potential difference along the main channel and said at least one subsidiary channel, wherein the voltage control means comprises a diode chain connected between the voltage source and earth, at least one subsidiary channel at a branch point being switchably connected to at least two alternative points in the diode chain so as to provide first and second configurations, the potential difference along the subsidiary channel in the region of the branch point in the first configuration having opposite polarity to the potential difference along the subsidiary channel in the region of the branch point in the second configuration.
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9. A separating device according to any one of the preceding claims in which the channels are electrophoresis channels.

10. A separating device according to claim 1 in which at least one of the subsidiary channels is further branched, the device including a further switchable voltage control means for the device including a further switchable voltage control means for controlling a further voltage in the region of the further branch point.

10 11. A method of separating an electrically charged component from a mixture, by differential flow along a branched channel structure, the method comprising the steps of:

- (i) applying a force to the mixture so as to move the mixture along a main channel of a channel structure to a branch point connecting the main channel to at least two branch channels; and
- 15 (ii) applying an electrical potential difference to a portion of each branch channel in the region of the branch point, wherein the electrical potential difference applied to a selected branch channel presents a polarity at the branch point which is different from the polarity presented at the branch point by an electrical potential difference applied to another branch channel at the said branch point.

20 25 12. A method according to claim 11 which further comprises reversing the polarity presented by the electrical potential difference applied to the selected branch channel, and reversing the polarity presented by the electrical potential

difference applied to the said another branch channel at the branch point, so as to change the selected branch channel from a first to a second branch channel.

13. A method as claimed in claim 11 or claim 12 in which the said force is
5 generated by means of an electrophoretic potential.

14. A method as claimed in claim 11 or claim 12 in which the said force is generated by means of fluid pressure.

10 15. A method as claimed in claim 11 or claim 12 in which the said force is generated by means of gravity.

16. A method as claimed in claim 11 or claim 12 in which the said force is centrifugal.